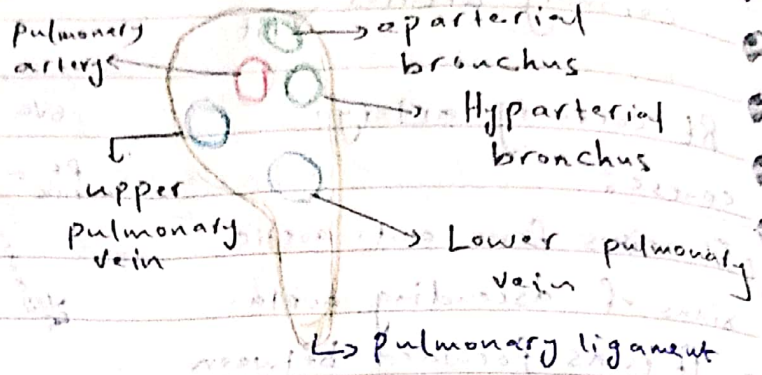
1- Root of the right lung:

Major structures forming the root of Rt lung:

1- 2 Bronchi → eparterial
↳ Hyparterial

2- pulmonary a. between the 2 bronchi

3- 2 pulmonary veins: → upper → the most ant. structure
↳ Lower → the most inferior "



minor structures:

1- 1 bronchial artery that arises from the Rt 3rd posterior intercostal a.

2- Ant. and post. pulmonary plexuses: infront and behind the main structures of Hilum.

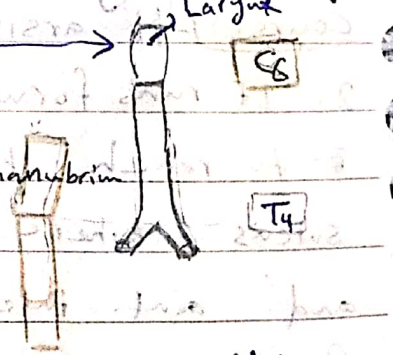
3- Broncho-pulmonary Lymph nodes.

2- Trachea (begining - termination - structure)

Trachea is an elastic tube that conveys air into and out of Lungs.

Begining:

In the neck at the Lower end of Larynx (at the Lower border of cricoid cartilage opposite C_6).



Termination: In the thorax at the level of sternal angle opposite T_4 by dividing into 2 bronchi.

Structure: Its wall is supported by (16-20) cartilagenous rings which are C-shaped being deficient posteriorly and being replaced by (trachialis ms)

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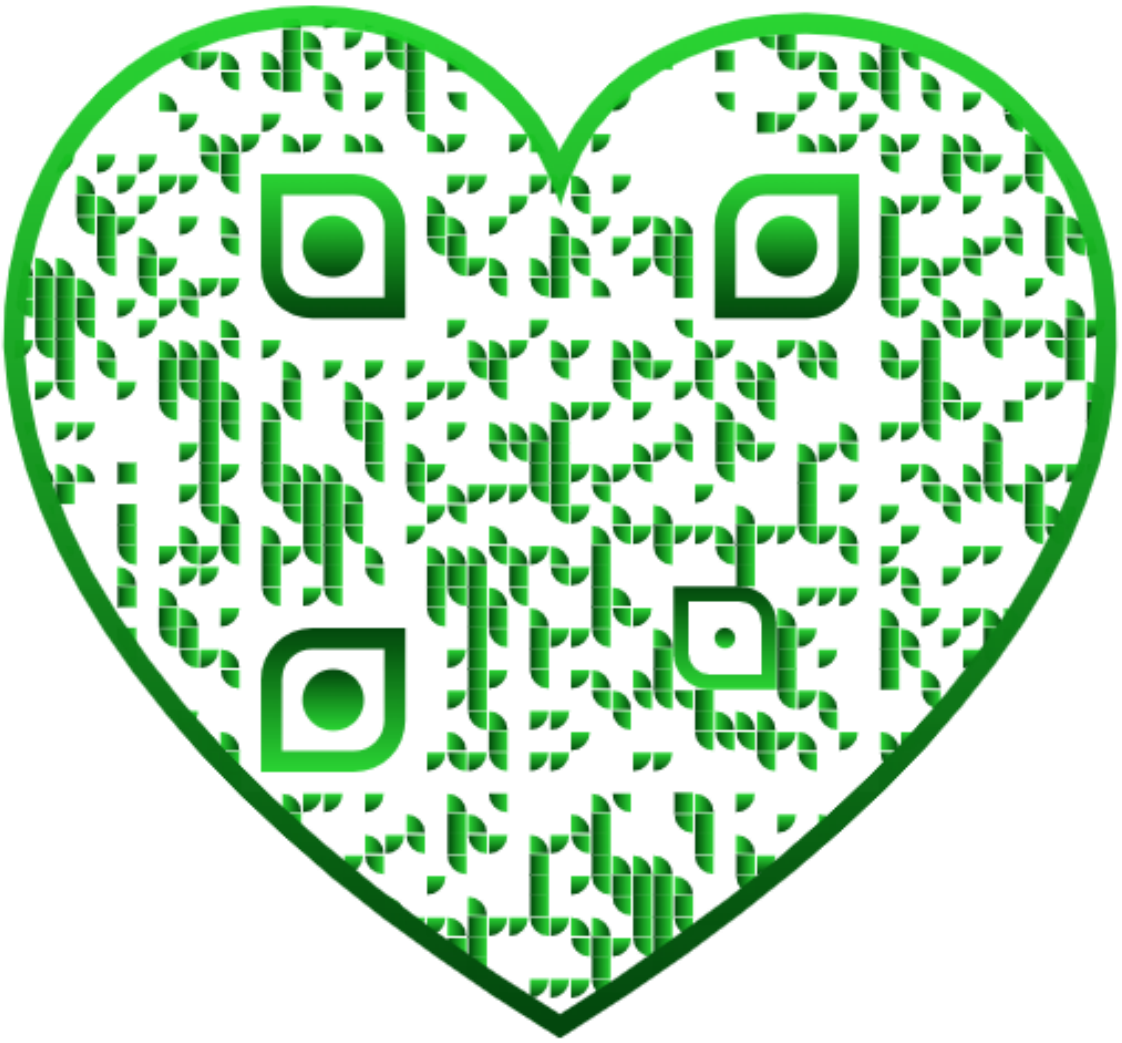


3- coronary artery (course and branches)

coronary arteries → Lt
↘ Rt

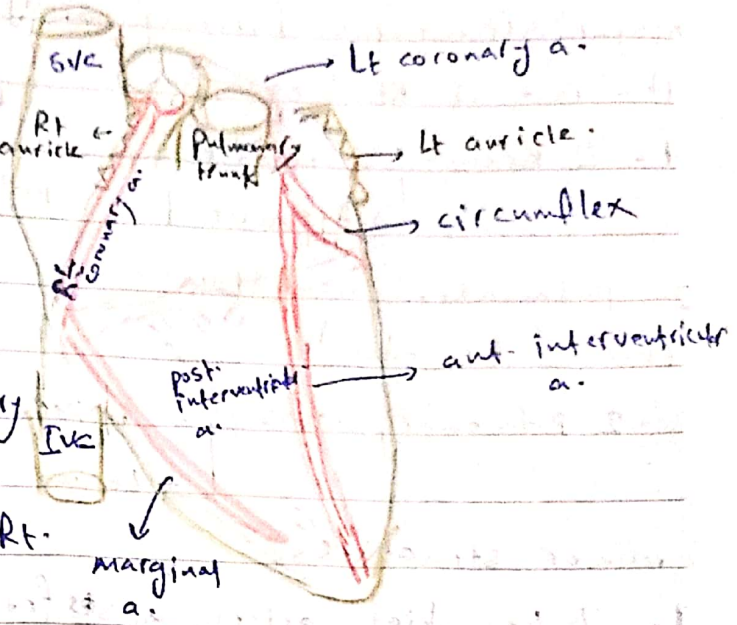
Rt coronary artery:

course:

1- It arises from ant. aortic sinus of ascending aorta.

2. It runs forward between Rt auricle and the root of pulmonary trunk to reach coronary sulcus.

3- It runs downwards in the Rt. coronary sulcus to reach inf. border of the heart.



4- Finally, it turns backwards to reach post. part of sulcus.

Branches: 1- Marginal artery 2- Right conus artery

3- posterior interventricular artery. 4- vascular twigs → Ascending aorta
↘ pulmonary trunk

5- Artery of SAN 6- Atrial and ventricular branches.

7- Anastomotic br with circumflex of Lt coronary a.

Lt coronary artery:

Course: 1- It arsises from Lt post aortic sinus of ascending aorta

2- It runs forward between Lt auricle and pulmonary trunk

3- to reach the upper end of ant. interventricular sulcus where it ends by dividing into circumflex and ant. interventricular a.

Branches: 1- vascular twigs to ascending aorta and pulmonary trunk: 2- Anterior interventricular artery

3- circumflex a. 4- Br. to SAN.

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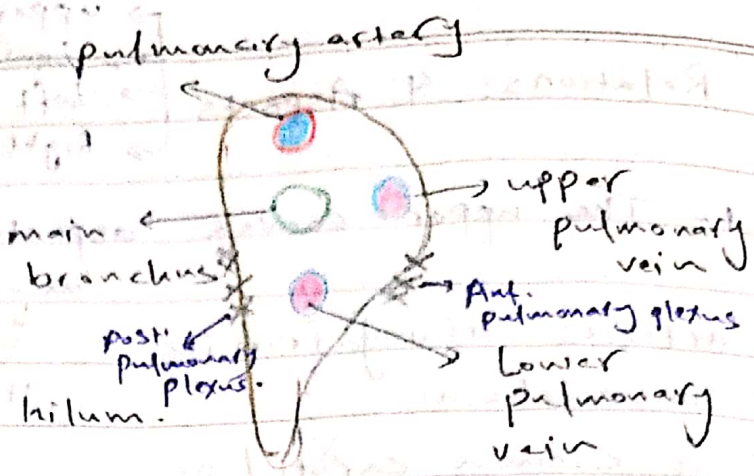
Root of the left lung



Major structures:

1- Main bronchus → occupies a post. position.

2- pulmonary artery → occupies the upper part of hilum.

3- 2 pulmonary veins

→ upper (Most ant.) → Lower (Most interior)

Minor structures:

1- 2 bronchial aa. arising from descending aorta.

2- Anterior and post pulmonary plexuses.

3- Broncho-pulmonary Lymph nodes.

Arch of aorta (course - relation - branches)

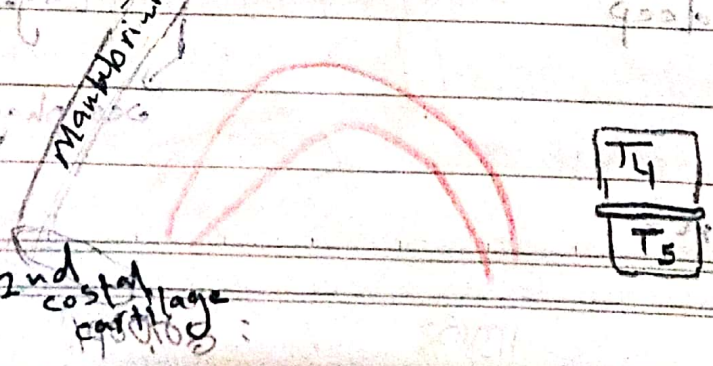
<u>course</u>

1- It begins behind the Rt 2nd sterno-costal junction as a continuation of ascending aorta.

2- It runs an arched course behind the lower 1/2 of manubrium.

3- It passes upwards, backwards to the left then bends downwards.

4- It ends on the left side of the disc between T_4 and T_5 by becoming the descending aorta.



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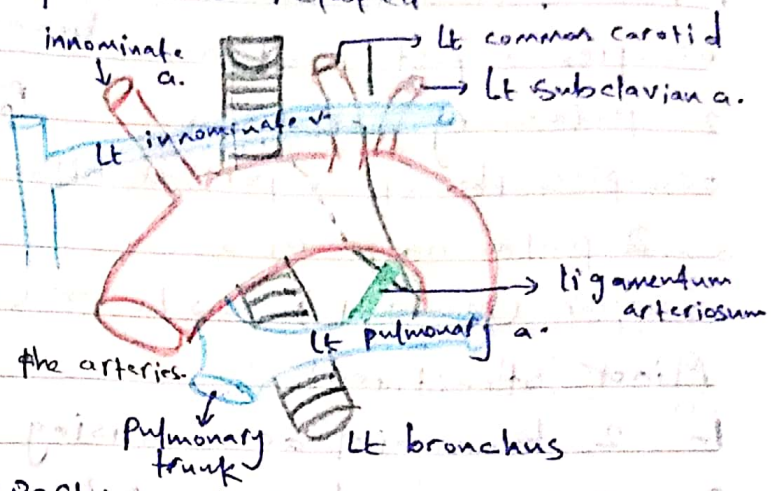
Relations: 4 Aspects
- upper convex
- Lower concave
- Left anterior
- Right posterior.

1- The upper convex aspect is related to:

A) 3 arteries arising from it:
1- innominate a.
2- Lt. common carotid a.
3- Lt subclavian

B) Lt innominate vein crossing the arteries.

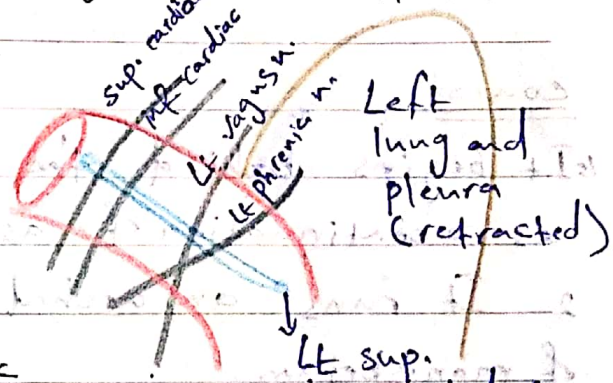


2- The Lower concave aspect:

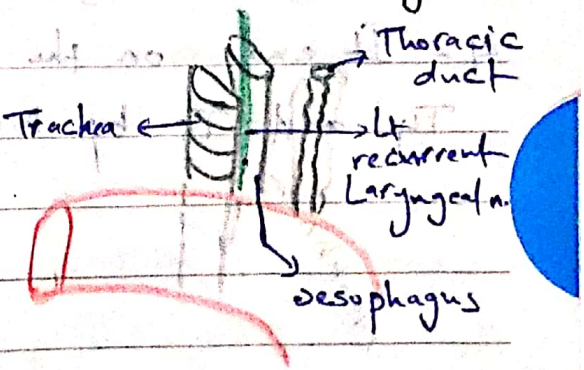
A) 3 arteries
- pulmonary trunk
- Rt pulmonary a.
- Lt pulmonar artery with ligamentum arteriosum.

B) Lt main bronchus.

3- The Left ant. aspect.
related to the left mediastinal pleura and lung but separated from it by 4 nerves and one vein
- Lt vagus
- Lt phrenic
- sup. cervical cardiac br. of Lt symp. chain
- inf. cervical cardiac br.
- Left sup. intercostal v.



4- The Rt post. aspect:
1- Trachea (bifurcation) and deep cardiac plexus.
2- Oesophagus (Lt. border)
3- Lt recurrent laryngeal n.
4- Thoracic duct



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Branches of aorta:

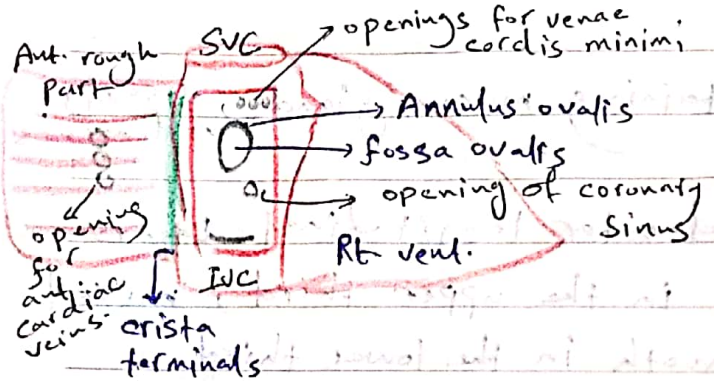
1- Innominate a.

2- Lt common carotid a.

3- Lt subclavian a.

4- Thyroid ima a.

6- Interior of Rt atrium



The interior of Rt atrium is divided into:

1) Anterior rough part

2) post smooth part

separated by crista terminalis

The anterior part is rough due to presence of musculi pectinati "parallel muscular ridges"

They extend from crista terminalis onto the lat: and ant wall of Rt atrium. They form dense network in Rt auricle.

The post. smooth part receives openings of veins returning the Heart

- SVC has no valve.
- IVC has a rudimentary valve
- coronary sinus → guarded by valve.
- Anterior cardiac vv (3-4 small vv)
- venae cordis minimi

The interarterial septum shows an oval depression called "fossa ovalis" which is bounded above and on sides by a raised margin called Annulus ovalis.

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7- Esophagus (structure - course - relation - constriction - Nerve supply)

Structure:

1- Mucosa: lined by non-keratinized stratified squamous with an underlying lamina propria and muscularis mucosae.

2- Submucosa

formed of loose CT containing mucous glands, vessels and nerves

3- Muscularis

Formed of inner circular and outer longitudinal Layers. The ms. fibers are striated in the upper third, mixed in the middle third and smooth in the lower third.

4- Adventitia: The outer CT Layer rich in elastic fibers

Course:

1- It begins in the neck opposite the lower border of cricoid cartilage at the level of C_6.

2- It descends into the thorax though superior and posterior mediastina.

3- It passes through the oesophageal opening of diaphragm to reach the abdomen where it joins the stomach

thus the course of oesophagus is divided into cervical, thoracic and abdominal.

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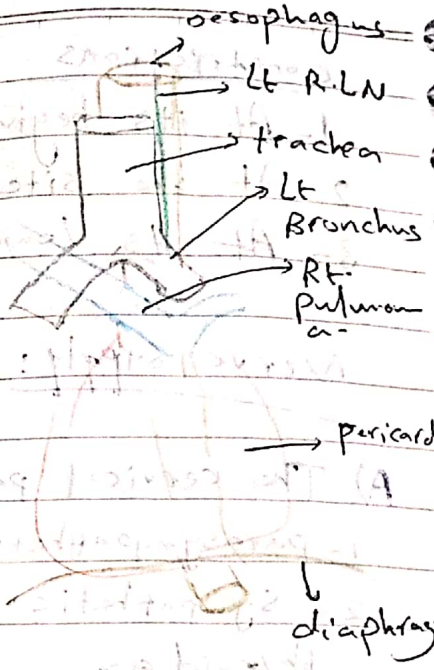
Relations of oesophagus

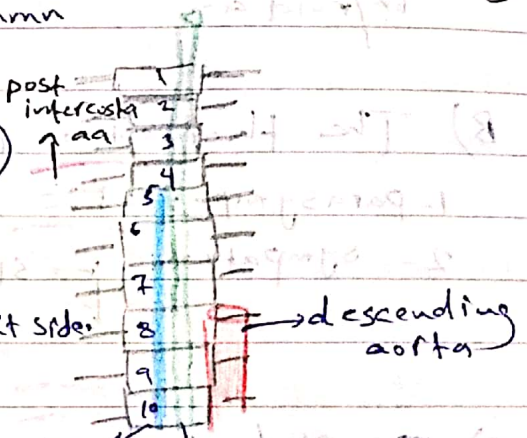


Ant. relations

1- Trachea with Lt Recurrent Laryngeal n).
2- Lt Bronchus
3- Rt pulmonary a.
4 - pericardium
5 - diaphragm.

post. Relations.

→ In sup. mediastinum → vertebral column



→ In post. mediastinum (upper part) ↑ oesophagus separated from vertebral column by:

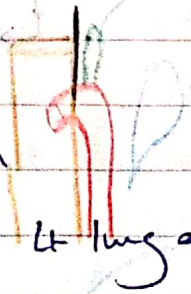
a) upper 5 post. intercostal aa & Rt side.
B) azygous v.
c) thoracic duct

→ In post. mediastinum (Lower part)

post. intercostal aa., azygous vein, thoracic duct, Descending Thoracic aorta.

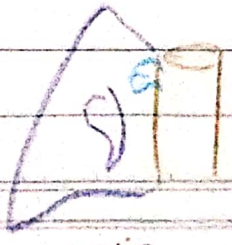
Lt Relations

1- Left Recurrent laryngeal n.
2- Arch of aorta
3- Descending thoracic aorta
4- Thoracic duct
5- mediastinal surface of Lt lung and Lt pleura.



Rt Relations

1- Arch of azygous
2- Mediastinal surface of Rt Lung



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constrictions

1- At its begining
2- At the site where it is crossed by Lt main bronchus
3- At its Lower end as it passes through diaphragm

Nerve supply:

A) The cervical part:

1- parasympathetic from recurrent laryngeal nn.
2- sympathetic from plexus around inferior thyroid a.

B) The thoracic part:

1- parasympathetic from Rt and Lt vagus nn.
2- sympathetic → splanchnic nn
→ upper 4th ganglia

C) The Abdominal part:

1- parasympathetic → ant. and post. gastric n
2- sympathetic → splanchnic nn
→ Symp. chain

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8 Azygos vein (course - tributaries - origin)

origin:

Variable:

1) Most commonly : From the back of IVC at level of Renal veins (opposite L_2)
2) Less commonly : as a continuation of Rt subcostal v.
3) occasionally : by union of Rt subcostal v. and ascending lumbar.

Course

1- It enters through the aortic opening of diaphragm to ascend first in post. mediastinum then sup. mediastinum.

A) In post. mediastinum

It ascends on the Rt side of the lower 8 thoracic vertebrae

Relations

Ant. → oesophagus (below) + Root of Rt Lung above
post. → Lower 8 Thoracic vertebrae + Rt post intercostal aa.
to Lt → thoracic duct + descending aorta
to Rt → Rt lung and pleura

B) In sup. mediastinum :-

It makes an arch above the root of the Rt lung

2- In the back of SVC opposite the 2nd Rt costal cartilage, azygous vein ends.

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Tributaries

1- Rt sup. intercostal vein (formed by union of 2nd, 3rd, 4th post. intercostal veins)

2- Rt post. intercostal v. from 5 → 11

3- Rt subcostal vein

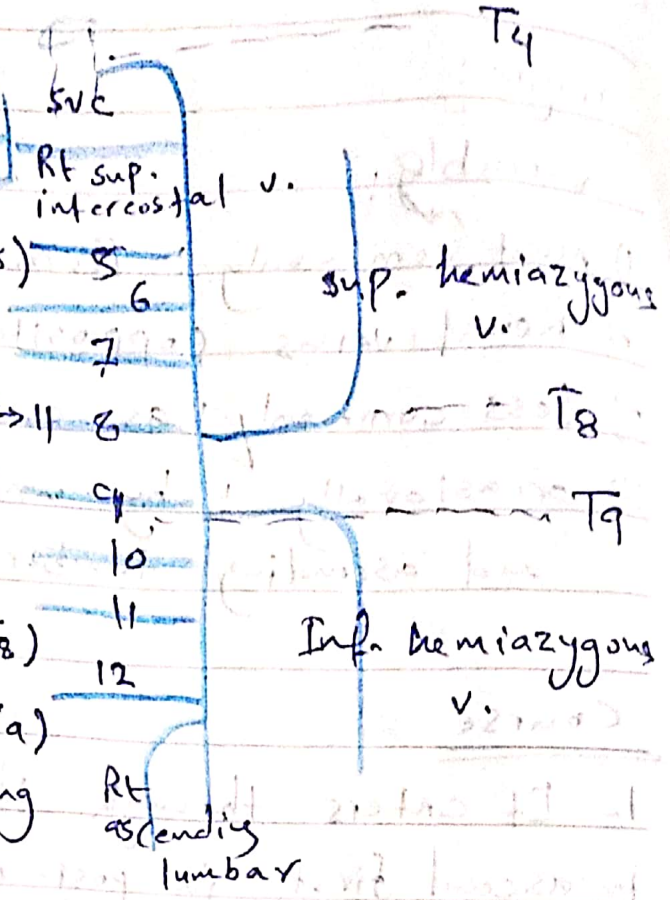
4- Rt ascending lumbar v.

5 - Sup. hemiazygous vein (T_8)

6- Inferior hemiazygous v (T_9)

7 - Bronchial veins from Rt lung

8 - Some oesophageal, pericardial and diaphragmatic veins



9- Pleura:

Def: a completely closed sac which is invaginated by the lung from its medial aspect.

Subdivisions:

a) Cervical part: the part bulging up through thoracic inlet.

b) Costal part: the part lining the ribs and intercostal spaces.

c) Mediastinal part: the part covering the side of mediastinum

D) Diaphragmatic: the part covering the upper surface of diaphragm.

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10- Nerve supply of diaphragm

1- phrenic nerves (Motor)

2- Branches from the lower 6 or 7 intercostal nerves (sensory to diaphragm)

11- The level of bifurcation of trachea

→ (the level of sternal angle opposite the lower border of T_4)

12- Internal thoracic (mammary) artery (origin, course, branches)

Origin: From the 1st part of subclavian a. (in the root of neck)

Course: 1- It enters the thorax by passing behind the clavicle, crossing infront of cervical pleura and apex of lung.

2- It descends vertically behind the upper 6 costal cartilages lying 1 cm lat. to lat. border of sternum

3- It's accompanied by internal mammary v. down to the 3rd intercostal space, below this level it's accompanied by 2 venae commitantes which unites to form internal mammary v.

4- It terminates opposite 6th intercostal space by dividing into 2 terminal branches

Branches

1- pair of ant. intercostal aa.
2- perforating branches
3- pericardiaco-phrenic a.
4- pericardial
5- sternal
6- Mediastinal
7- Musculo-phrenic
8- sup. epigastric a.

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13- Right ventricle (Inflow and outflow part)

The inflowing part:
It's rough due to presence of:
1) Trabeculae carni: → coarse muscular bundles giving the walls a sponge-like appearance
2) Moderator band (septo-marginal trabecula)
It's a muscular band connecting the ant. wall of Rt. ventricle with the interventricular septum.
3) papillary muscles:
small conical muscular projections which protrude into cavity giving rise to chordae tendinae attached to 2 cusps of tricuspid valve.

The outflowing part: (smooth)
It's called infundibulum because it forms a conical pouch leading to pulmonary orifice

14- Serous pericardium
It is a closed serous sac which is invaginated by heart and roots of its big vessels

this invagination converts the serous sac into potential space having 2 layers [visceral / parietal]

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5. Cardiac plexus (site - formation - distribution)

Cardiac Plexuses [superficial
deep.

Superficial cardiac plexus:

site: below the arch of aorta and on the Rt side of ligamentum arteriosum.

rmation by 2 autonomic nerves:

sup. cervical cardiac branch of Lt sympathetic chain.
Inf. cervical 4 4 of Lt vagus n.

anches:

- Deep cardiac plexus.
2. Rt coronary plexus around right coronary a.
3 - Lt ant. pulmonary plexus infront of Lt bronchus.

Deep cardiac plexus

site: Infront of tracheal bifurcation. deep to arch of aorta.

Formation: by all cardiac branches arising from the 2 sympathetic chains and 2 vagi except except the 2 branches of superficial cardiac plexus

Branches

1 - To Rt and Lt coronary plexus
2 - To Rt and Lt ant pulmonary plexus
3 - branches to superficial cardiac plexus

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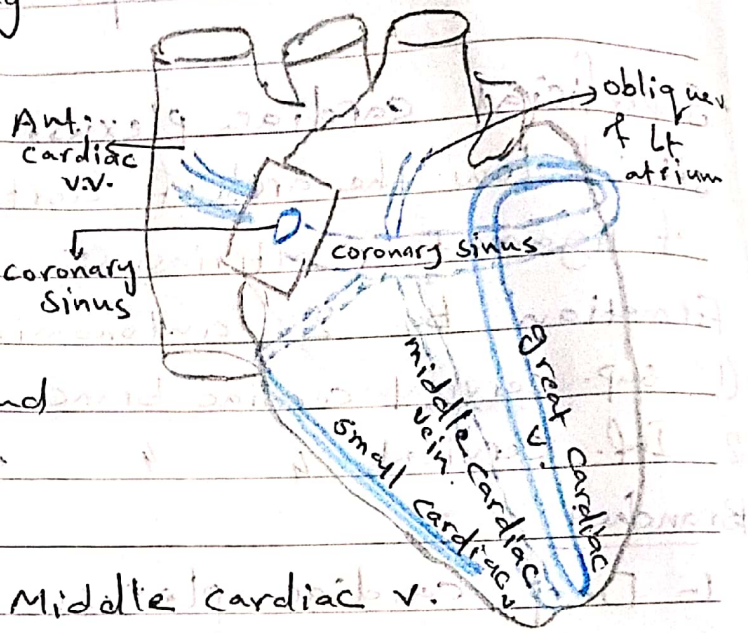
16- coronary sinus:

It's a wide venous channel about 4 cm long draining most of cardiac vv.

Site: it lies in the post. part of coronary sulcus

Termination:-

It opens into the cavity of Rt atrium just above and to the left of IVC



Tributaries:

1- Great cardiac v. 2- Middle cardiac v.

3- small cardiac v. 4- oblique v. of Lt atrium

17. compare between Rt and Lt ~~card~~ lungs

	Rt lung	Lt. lung
size	slightly larger wider, shorter	slightly smaller in size narrower
Ant. border	straight has no lingula	presents a cardiac notch, projects below the notch forming the lingula
fissures	oblique horizontal	only one; oblique
lobes	3, upper, middle, Lower	upper, Lower
Hilum	2 bronchi { eparterial, hyparterial; 1 bronchial a	one main bronchus 2 bronchial aa.
segments	10	8

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